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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,428	02/28/2002	Robert A. Houtchens	1161.2002-000	6272

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EXAMINER	
WITZ, JEAN C	

ART UNIT	PAPER NUMBER
1651	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/090,428	HOUTCHENS ET AL.	
	Examiner	Art Unit	
	Jean C. Witz	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-27 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-27 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 17 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the method requires that whole blood is separated such that a red blood cell fraction and a liquid fraction is formed. Consistent with the specification, the red blood cell fraction is deemed to contain red blood cells and the liquid fraction is deemed to contain the remaining components of whole blood, i.e. plasma, white blood cells and platelets. However, claim 17 requires that the liquid fraction include most of the red cells of whole blood. If the liquid fraction contains most of the red cells, there remain few, if any, red cells in the red blood cell fraction. Since the liquid fraction is, in the least, not used in any further step, it remains undisclosed, unpredictable and therefore not enabled as to how one skilled in the art would practice the claimed method without the presence of a majority of the red blood cells in the subsequently-treated red blood cell fraction.

2. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "liquid fraction" in claim 17 is used by the claim to mean "the fraction of whole blood containing most of the red cells of whole blood", while the accepted meaning is, in the least, "the soluble, non-cellular components of blood, i.e. plasma." The term is indefinite because the specification does not clearly redefine the term.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "red blood cell fraction" lacks antecedent basis in claim 17.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6, 10-12, 14, 16, 19-21, 23-24 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 9422482 to Biorelease Technologies, Inc.

Claim 1 recites a method of purifying red blood cells where whole blood is separated into a red cell fraction and a liquid fraction and diafiltering the red cell fraction. This method produces purified red blood cells. Dependent claims 2-3 and 5 require that the red blood cell fraction is obtained by centrifugation, and dependent claim 4 requires that the red cell fraction consist essentially of red blood cells. Dependent claim 6 requires that the separation of red blood cells from the liquid fraction occur by decantation. Dependent claims 10-12 require the addition of an anticoagulant to the whole blood, specifically sodium citrate. In dependent claims 14 and 16, the purified red blood cells are lysed, specifically lysed osmotically. Dependent claim 19 requires that the red blood cell fraction is diafiltered with a membrane with a permeability ranging between about 0.1 μm and about 5 μm and dependent claim 20 requires that the whole blood is bovine whole blood.

Independent claim 21 recites a method of forming a lysate of purified red blood cells for use in a hemoglobin blood substitute where whole blood is separated into a red cell fraction and a liquid fraction, diafiltering the red cell fraction to form purified red blood cells and lysing the purified red blood cells. Dependent claim 23 requires the addition of an anticoagulant to the whole blood. Dependent claim 24 requires that the red blood cell fraction is obtained by centrifugation. Dependent claim 26 requires that the whole blood is bovine whole blood.

At page 20 of the WO 9422482 reference to Biorelease Technologies, Inc., drawn to methods of obtaining hemoglobin for further use, Example 1, bovine blood (cf. instant claims 20 and 26) is collected. An anticoagulant, specifically anhydrous citric

acid and sodium chloride) is added (cf. instant claim 10) which upon mixture with the blood, sodium citrate is immediately formed (cf. instant claims 11-12 and 23). The anticoagulated whole blood is subjected to centrifugation (cf. instant claims 2-3 and 24) within the range claim in instant claim 5. See page 21. Packed red cells are separated from the plasma and buffy coat (cf. instant claims 4 and 6) and are diafiltered with a membrane having pore size of 0.65 μ, which is within the range of about 0.1 μm and about 5 μm recited in claim 19. After diafiltration, the red blood cells are osmotically lysed (cf. instant claim 16). Therefore, the reference is deemed to teach each and every limitation of independent claims 1 and 21 as well as all dependent claims identified above, thereby anticipating the cited claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 7, 13, 15, 18, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 9422482 to Biorelease Technologies, Inc. combined with WO 9629346 to Biopure Corporation.

The teachings of WO 9422482 to Biorelease Technologies, Inc. have been discussed supra. The limitations of the cited claims are not disclosed in the reference. However, in a method of obtaining hemoglobin for further use, WO 9629346 to Biopure Corporation, provides one of ordinary skill in the art with the motivation to practice the instant claim limitations.

In the WO 9629346 reference, whole bovine blood is collected and an anticoagulant is added. Sodium citrate, EDTA and heparin are disclosed as effective alternatives. See page 10. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute either heparin (cf. instant claims 11, 13 and 23) or EDTA (cf. instant claims 11 and 23) for the sodium citrate with the reasonable expectation of successful anticoagulation of the bovine whole blood.

At page 13 of the WO 9629346 reference, during the separation of the red blood cell fraction from the liquid fraction, platelets and white blood cells are retained while the plasma is removed by diafiltration (cf. instant claim 18). Then the red blood cells are separated from the white blood cells and platelets by centrifugation (page 15) such that the liquid fraction as well as white blood cells are removed instantly during centrifugation (cf. instant claim 7). It would have been obvious to one of ordinary skill in

the art to remove the plasma prior to the removal of the white blood cells and platelets for the removal of plasma proteins. Further removal of the white blood cells and platelets via centrifugation would have been motivated by the teaching of the WO 9629346 reference that it is preferable to concentrate and isolate the red blood cells to obtain the most hemoglobin in the sample. Finally, in order to obtain the hemoglobin, the WO 9629346 reference teaches that lysis can occur via mechanical lysis, which is taught as an alternative to chemical or hyptonic lysis. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute mechanical lysis (cf. instant claims 15 and 25) for the osmotic lysis with the reasonable expectation of successful lysis of the red blood cells.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claim 1, 8 and 9 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 4 of U.S. Patent No. 6,518,010. Although the conflicting claims are not identical, they are not

patentably distinct from each other because the diafiltration step (b) in cited claim 1 inherently performs the separation step (a) and the purification step (b) in instant claim 1. Claims 8 and 9 require that the whole blood is defibrinated (per step (a) of cited claim 1) and cited claim 4 recites agitating the blood which is a specie of the generic step of mechanical defibrination recited in instant claim 9, thereby anticipating the claim.

10. Claim 21 and 27 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/306,819. Although the conflicting claims are not identical, they are not patentably distinct from each other because the cited claims teach separation of red cells from whole blood, and the scope of the phrase "isolating hemoglobin molecules from the red blood cells" per the specification includes the steps of diafiltration and lysis).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean C. Witz whose telephone number is (571) 272-0927. The examiner can normally be reached on 6:30 a.m. to 4:00 p.m. M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jean C. Witz
Primary Examiner
Art Unit 1651